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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,540	02/03/2005	Karikath Sukumar Varma	1-16908	7555
1678	7590	08/22/2006	EXAMINER	
MARSHALL & MELHORN FOUR SEAGATE, EIGHT FLOOR TOLEDO, OH 43604			IVEY, ELIZABETH D	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/523,540	VARMA ET AL.
Examiner	Art Unit	
Elizabeth Ivey	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 01 June 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 17-22 and 28-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 17-22 and 28-42 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-22, 28-31 and 41-42 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,624,998 to Itoh et al.

Regarding claim 17, Itoh discloses an aqueous gel interposed between two or more transparent plates (column 1 lines 23-26 and column 3 lines 22-25), which is made from sodium silicate (column 5 line 58), sodium aluminate (column 6 lines 1 and 13-17) and a hydrocarboxylic acid such as tartaric or lactic acid (column 10 line 28).

Regarding claim 19, Itoh discloses metal oxide content of 1-45 weight % allowing for 1-5 wt% Al (column 6 lines 55-58).

Regarding claim 20, Itoh discloses an interlayer thickness of 0.1-10.0mm (column 11 line 44) overlapping the range of 0.5-2.0mm.

Regarding claims 21-22, Itoh discloses an aqueous gel interposed between two or more transparent plates (column 1 lines 23-26 and column 3 lines 22-25) and that the plates may be glass (column 10 lines 63-65).

Regarding claims 28-29, Itoh discloses the soluble aluminate used as a sodium aluminate, which is an alkali metal aluminate (column 6 line 1).

Regarding claims 30-31, Itoh discloses the use of lactic or tartaric acids, which are hydroxycarboxylic acids (column 10 lines 24-28).

Regarding claims 41-42, Itoh discloses the use of glycerol dimethacrylate, which is a polyhydric compound, in the interlayer (column 4 lines 12-13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 18 and 32-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,624,998 to Itoh et al.

Regarding claim 18, Itoh discloses the interlayer water content as 60% by weight or less overlapping the range of 10-35% by weight (column 6 lines 59-65). Although Itoh does not explicitly disclose an example with a water content within this range, it would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the overlapping portion of the ranges disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, *In re Malagari*, 182 USPQ 549.

Regarding claim 32, Itoh discloses all of the limitations of claim 31 but does not expressly disclose the use of citric acid as the hydrocarboxylic acid, however, because citric acid is a carboxylic acid known in the art as a substitute for tartaric acid it would have been obvious to a person having ordinary skill in the art at the time of the invention to use citric acid in place of tartaric acid in the invention of Itoh since it has been held to be within the general skill of a

worker in the art to select a known material of obvious engineering choice. In re Leshin, 125 USPQ 416.

Regarding claims 33 and 34, Itoh discloses all of the limitations of claim 17 but does not expressly disclose a weight ratio of $\text{SiO}_2:\text{M}_2\text{O}$ from 2.0:1 to 4.0:1 or 2.5:1 to 3.0:1 where M represents an alkali metal ion. However, it would have been obvious to a person having ordinary skill in the art at the time of the invention to adjust the ratio for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 35, Itoh discloses all of the limitations of claim 33 but does not expressly disclose the use of potassium silicate. However, because potassium silicate is well known in the art as an alkali metal silicate substitute for sodium silicate it would have been obvious to a person having ordinary skill in the art at the time of the invention to use potassium silicate in place of sodium silicate in the invention of Itoh since it has been held to be within the general skill of a worker in the art to select a known material of obvious engineering choice. In re Leshin, 125 USPQ 416.

Regarding claim 36, Itoh discloses all of the limitations of claim 35 but does not expressly disclose a weight ratio of $\text{SiO}_2:\text{M}_2\text{O}$ from 1.43:1 to 2.05:1 where M represents an alkali metal ion. However, it would have been obvious to a person having ordinary skill in the art at the time of the invention to adjust the ratio for the intended application, since it has been

held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 37, Itoh discloses all of the limitations of claim 35 but does not expressly disclose a molar ratio of sodium ions to potassium ions of at least 2:1. However, it would have been obvious to a person having ordinary skill in the art at the time of the invention to adjust the ratio for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 38-39, Itoh discloses all of the limitations of claim 17 but does not expressly disclose a molar ratio of silicon to aluminum of 20:1 to 35:1 or 25:1 to 32:1. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the ratio for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 40, Itoh discloses all of the limitations of claim 17 but does not expressly disclose a weight ratio of silica to alkali metal of 2:1 to 4:1. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the ratio for the intended application, since it has been held that discovering an optimum value of a result

effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 32-40 are product by process claims wherein the patentability of the product does not depend on its method of production. “If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process unless it can be shown that the product produced by the process is in some manner measurably distinct from the product produced by another process.” *See MPEP 2113*. As such, the process limitations within claims 32-40 do not provide patentable distinction over the prior art.

Claims 33-34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,624,998 to Itoh et al. in view of website <http://www.pqcorp.com>.

Regarding claims 33 and 34, Itoh discloses all of the limitations of claim 17 but does not expressly disclose a weight ratio of SiO₂:M₂O from 2.0:1 to 4.0:1 or 2.5:1 to 3.0:1 where M represents an alkali metal ion. However, webpage <http://www.pqcorp.com> discloses said ratios were commonly known and commercially available at the time of the invention. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an alkali metal silicate of these ratios in the invention of Itoh.

Regarding claim 36, Itoh discloses all of the limitations of claim 35 but does not expressly disclose a weight ratio of SiO₂:M₂O from 1.43:1 to 2.05:1 where M represents an alkali metal ion. However, webpage <http://www.pqcorp.com> discloses said ratios were commonly known and commercially available at the time of the invention. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an alkali metal silicate of these ratios in the invention of Itoh.

Response to Arguments

Examiner acknowledges amendment to claims 17, 19 and 20 and withdraws the claim objections.

Applicant's arguments filed June 1, 2006 have been fully considered but they are not persuasive. Arguments with regard to claim 18 are moot in view of the new ground of rejection.

Regarding claims 17 and 28-29, and Itoh, applicant's assertion that Itoh does not disclose a water soluble silicate, that the hydroxyl carboxylic acid, which applicant agrees is used in the article, would not dissolve other materials. However, Itoh does in fact disclose sodium silicate, a sodium aluminate and a hydroxyl carboxylic acid as precursors to the gel. Additionally, the aspects the applicant is arguing are not presented in the claims. Itoh does in fact disclose a transparent aqueous gel having these materials as precursors.

Regarding claim 18, although Itoh does not explicitly disclose an example with a water content within this range, it would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the overlapping portion of the ranges disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, *In re Malagari*, 182 USPQ 549.

Regarding claims 32-40, the site indicates an historical presentation of the web page in the indicated format and there is no claim of silica particles.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,519,088 to Itoh discloses a clear intumescent layer, which may be placed between glass sheets comprising an alkali metal silicate (sodium silicate), a water soluble aluminate (sodium aluminate) and a hydroxycarboxylic acid. Itoh discloses the layer to contain 60% or less by weight of water

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Ivey whose telephone number is (571) 272-8432. The examiner can normally be reached on 7:00- 4:30 M-Th and 7:00-3:30 alt. Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Elizabeth D. Ivey



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8/20/06